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U.S. Environmental Protection Agency
Science Advisory Board
Committee: Advisory Council on Clean Air Compliance Analysis (Council)
Air Quality Monitoring Subcommittee (AQMS) Teleconference

Summary Minutes of Public Teleconference
Date: July 2, 2001

Committee Members: (See Roster - Attachment A.)
Date and Time: 2 pm to 4 pm, July 2,, 2001 (See Federal Register Notice - Attachment B).
Location: Ariel Rios North, Conference Room 6013
Purpose: The AQMS will review the Agency's proposed approach to emission inventories and air quality modeling and develop a draft response for the July 9-10, 2001 meeting of the Council to Agency charge questions on those issues.
Attendees: Chair of the AQMS: Dr. Paulette Middleton; COUNCIL Members: Dr. Paul Lioy; Other SAB Members participating: Dr. Philip Hopke; SAB Consultants: Drs. David Chock, Panos Georgeopoulis, Tim Larson, James Price.. SAB Staff: Dr. Angela Nugent, Designated Federal Official, and Ms/ Rhonda Fortson. Other Persons Attending: Mr. James DeMocker and Dr. Bryan Hubbell (EPA, Office of Air and Radiation); Mr. Josh Habib (IEc); Dr. Donald McCubbin (Abt); Dr. Jim Neumann (IEc); Dr. Ellen Post (Abt); Dr. Henry Roman (IEc); Mr. Jim Wilson (Pechan Avanti); Dr. Leland Deck (Abt); Dr. Sharon Douglas (ICF/SAI); and Dr. Thomas Myers (ICF/SAI)..

Meeting Summary:

The discussion generally followed the issues and general timing as presented in the meeting Agenda (see Meeting Agenda - Attachment C). The teleconference lasted until 4:00 pm. There were no written comments submitted to the Committee, and there were no written requests to present public comments during the discussion.

Welcome and Introductions - Dr. Paulette Middleton, the Chair, opened the session at 1 a.m. welcoming members and consultants (Roster, Attachment A), and reviewed the agenda (Attachment C). Dr. Angela Nugent, Designated Federal Official (DFO) took roll. She expressed appreciation to Mr. DeMocker on the materials provided for review. She began the

meeting by requesting members to complete the assignments described in the agenda and send their submissions by noon Thursday June 5 to herself and Dr. Nugent. Council members agreed to do so.

Public Disclosure

The DFO informed listeners that the SAB has determined that this panel has no legal "conflicts of interest" with the issue being reviewed. She then asked the one panel member who had not participated in the June 22, 2001 teleconference call to introduce himself and give a brief description of how his background, experience and interests relate to the review of the 812 analytical blueprint.

Dr. David Chock described himself as a Senior Staff Technical Specialist at Ford. He has extensively published in the area of air emissions modeling, data analysis and epidemiology. He has focused on statistical properties of Air Quality Standards.

Dr. Angela Nugent requested Dr. Middleton, Dr. Georgopoulis, Dr. Lioy and Dr. Larson to provide written public disclosures, along the lines of the example provided by Dr. Trudy Cameron.

Agency Overview of Material for Committee's Review, Specifically Related to Emissions Estimation," and their Relationship to Chapter 2, "Scenario Development" and Chapters 9 and 10 on Uncertainty and Results Aggregation and Reporting

Mr. DeMocker quickly expressed appreciation for SAB advice and introduced the major issues related to emissions estimation. He described the options related to geographic aggregation that were provided in an email immediately before the June 25th meeting and emphasized the importance of Council advice on the methods for geographic disaggregation. He directed AQMS members' attention to Table 10-3 which identifies Option 3 as the scenario for geographic disaggregation and also directed them to the related Key Question 5.

He also requested advice issues related to the Title-by-Title approach to scenarios, also described in the same Table as Option 2.

He asked for buidance on extending the analysis to 2030, so that the Agency to describe the full-fleet turnover scenario for the heavy-duty diesel rule.

Proposed Approach -- Point Sources Non-road and Engine Emissions and Other Area Sources

Dr. Price stated that the proposed approach was "pretty decent" for handling power production and confirmed that it was desirable to use recorded emission monitoring systems;

their use will provide substantially better information than has been previously available. He questioned how the Agency planned to model industries "in decline," such as coal, steel, and heavy manufacturing. Would they be characterized differently and geographic impacts calclulated differently from general economic growth patters. Mr. Jim DeMocker responded that the Agency planned to capture those large shifts. Mr. Jim Wilson confirmed that the EGAS model gave confidence that the agency will capture the economy's shift to the service sector.

Dr. Larson enquired about projections of power demands by state. Jim Democker responded that the demand for energy is disaggregated by region.

Dr. Price stated that he felt uncomforable with disaggregation at the state level; he would be more comfortable with regional or national disaggregation by source.

Dr. Middleton turned the Subcommittee's attention to energy scenarios. Mr. DeMocker responded that the agency did not propose an energy scenario in the blueprint, but that the "issue was on the table," given the Council members' conversations on Capitol Hill last February. He noted the "fairly strongly expressed view" within the Council not to generate energy scenarios, but to use existing energy assumptions and be explicit about them. Dr. Lioy interjected that he advocated a sensitivity analysis for energy scenarios that could be conducted as Supplemental Reduction Scenarios that could look at consumption of different fuels. Air quality implications of future choices, fuel mixes, and enregy processes could be discussed. Dr. Middleton stated that the AQMS would also suggest pursuing the sensitivity analysis approach.

Dr. Price then turned to non-road engines in vehicles. He required clarification in Table 3.2 to indicate changes in detailed categories of equipment/

Dr. Middleton suggested that for detailed questions about enhancements to categories, members should send comments to Dr. Price, herself, and the DFO. Dr. Middleton asked about whether the Agency was to get information on emissions from Canada and Mexico. Mr. Wilson responded that EPA expects 1995 data on Canadian emissions. Although there are some reporting issues regarding geographic areas and sources, he is expecting meaningful data. He was less hopeful about data from Mexico. Mr. DeMocker stated that information on these international data sources could be found in page 3.9.

<u>Proposed Approach -- Highway Vehicles</u>

Dr. Chock led the discussion. He enquired when MOBILE6 was to be released and when EPA was going to release policy guidance on its use. Dr. Hubbell responded that the document was not yet released in its final format. Dr. Chock stated that MOBILE6 was much improved over the previous version and that the Agency would benefit from using the new model. Mr. DeMocker requested specific advice regarding whether the potential improvements from waiting outweighed the costs of delay. Dr. Chock responded that MOBILE6 was more accurate; this view was seconded by others, who added that the model gave highly refined results. Dr. Chock questioned about the impact of the model on particulate matter and requested whatever data were available. Dr. DeMocker agreed to try to provide for next

week's meeting. Dr. Chock asked about the proportion of cold starts and whether the Agency factors those considerations into VMT. Mr. DeMocker replied that the trends emission database includes inputs from states on their mobile monitoring assumptions. States that have urban areas with nonattainment provide information; others don't. Dr. Chock concluded his comments with the judgement that inTable 10-3m option 5, which would model out to the year 2030 would have "lots of flux – long term projection may not be worthwhile in my opinion."

Proposed Approach: Quality Assurance/Data Evaluation

Dr. Tim Larson began his comments by asking for a discussion of baseline model estimates with measurements, especially to what extent they are possible and what criteria to use in comparative anlaysis. His questioned why the QA discussion focussed primarily on SO2 comparisons with model, if PM and ozone are drivers. He related this question to the question of disaggregation by region and how to choose the approach for geographic disaggregation. He suggested that one option is to look for where the monitors. are When you look at where is monitor that measures fine and coarse particles, he indicated that those are even a smaller set.

He also stated that the agency should focus on where monitors are for air toxics – where are those monitors. He noted that neither one of those general issues are raised in discussion on page 3-11.

Dr. Middleton added that a fundamental question is how to provide information togain confidence with the overall 812 assessment. She noted that the Health and Ecological Evaluation Subcommittee (HEES) also discussed the need to compare trends in years against modeling estimates. Dr. Lioy stated that stated we would want to have this information as part of uncertainty analysis. .

Dr. Larson stated that the Agency's improved ability to reduced the overestimate of crustal materials in primary emissions should show up in overall ability to predict trends. Dr. Lioy stated that it modeling should also show marginal trends emissions in PM and ozone.

Dr. Larson asked about the treatment of total particle emissions by size. He noted that issue was raised in the peer review information provided for REMSAD 6 – emphasized comparisons modeling with measurements. He also stated that nitrates as fraction of total particle mass was still an issue. Mr. DeMocker reponded that speciation issue still needs to be addressed. He expected that the Agency should be able to provide performance evaluation before Fall in time to be used by the 812 Study.

Orientation to Issues in Chapter 5"Air Quality Modeling," and their Relationship to Chapters 6 and 7 on Health and Ecological Effects and Chapter 10, "Results Aggregation and Reporting"

Mr. DeMocker quickly outlined several key issues (1) deal with REMSAD – Q8, V4 or 6, or wait till version 7; (2) whether to consider using REMSAD and its ozone projects in lieu of

any other model for ozone; (3) how to address question regarding use of REMSAD for mercury emissions, and especially the questions of transport and deposition of mercury; and (4) projections related to Title 6, especially the capability of AHEF for projectiing ODEF estimates to ozone completion andozone completion to ground-level effects.

Dr. Middleton requested when Title 6 modeling information would be available for AQMS review. Mr. DeMocker responded that he is waiting for word that peer review of one applciation of AHEF system to high-level transport analysis supporting NASA could be made available as a public document.

Proposed Approach: Ozone and PM Key Specific Question: 9, 10

Dr. Hopke stated that it was a good to move to REMSAD 6 for modeling ozone. He expressed interest in svaluation results with V6. REMSAD6 was preferable to urban airshed model variants for ozone calculations. He requested on biogenic VOCs as part of the ozone production mix, since NOx and biogenic VOCs generates ozone and would have implications for key aspect of control strategies and results. Mr. DeMocker replied that BISE 3 was intended to be used, but did not have documentation available. Dr. Sharon Douglas offered to clarify how the model includes biogenics, as is normal practuce for all ozone modeling.

Drs. Georgopoulis and Chock asked if the new version had been tested. Dr. Middleton requested that the AQMS see evaluations to provide advice on the model and evaluate for use with ozone. Mr. DeMocker responded that he will confer with the DFO concerning a proposed process and schedule for sharing interim results with the AQMS. Dr. Chock questioned the language in the peer review of REMSAD that "says ozone is not for application for ozone air quality questions." Dr. DeMocker stated he would check the language and that he believed the language referred to a different purpose than the 812 Study, that it provided a caution for people planning to use REMSAD for attainment demonstrations. The 812 Study has a different purpose : national-scale analysis, benefits analysis.

Mr. DeMocker briefly mentioned the benefits for consistency across multi-pollutant analysis for unified benefits analysis. Dr. Georgopoulis then responded that HAPs were not using REMSAD except for mercury. He also stated that if REMSAD is being elevated to a critical position in the enterprise, there is a need for very through documentation for the full range of uses. The documentation currently available is "sketchy" and can hardly be interpreted as thorough or detailed documentaiton. Dr. Douglas responded that there is an effort underway to develop very detailed REMSAD documentation. Mr. DeMocker confirmed that the agency will need to provide documention of all models used.

Dr. Middleton asked about the extent of comparisons between use of REMSAD 6 and

use of Models 3 platform. To what extent have those kinds of comparisons been done or will they be done.? Mr. DeMocker responded that he did not think these comparisons had been pursued.

Dr. Price asked about "PM fine" and whether the future emissions inventory modeling techniques were expected to result in differences modeling ambient concentrations (compared with those actually observed) divided into specides. He suggested taking component, e.g., black carbon, taking measure ambient concentration, comparing by modeled amount, and developing projections of current to future. He said that he is "betting substantially greater disagreements between modeled and measured" for fine particle.

Dr. Larson asked whether model performance criteria evaluation are same parameters as will be used in cost-benefit analysis? Whether AQMS is giving the economists the most salient indices that go in for cost-benefit calculation? Jim DeMocker stated that he is developing documentation on evaluation proceures. Dr. Middleton asked Mr. DeMocker to provide information on model validation processes, as they develop. Mr. DeMocker confirmed the importance of distinctions between species; that if errors in fine particle estimate, signficant errors of estimates can result. If we're underestimating proportion of fine particiles, we'd be underestimating benefits. Speciation important to understanding benefits.

<u>Proposed Approach: Other Pollutants Including Hazardous Air Pollutants and Mercury, Key Specific Question: 11</u>

Dr. Georgopolous stated that the REMSAD multi-pollutant platform but only applies to criteria pollutants, except mercury perhaps. He agreed that it made sense for criteria pollutants (e.g., CO, nox, no2) but did not see how "the issue of consistency is going to assured across chemicals. " There are issues of coarse resolution, local hot spots, urban neighborhoods. He said there were other alternatives for air toxics more appropriate than REMSAD. He questioned whether the REMSAD treatment of mercury, although improved over version 4.1, could address the issue of mercury's existence in concentrated plumes.

Dr. Middleton raised the related question of the results of the NATA review, which recommended that the NATA approach may be useful for benzene. Mr. DeMocker responded that the Agency is still working on that question. Dr. Lioy stated that the HEES supported use of benzene as a case study; Dr. Middletons stated that the AQMS could support this approach.

<u>Scenario Development (Chapter 2) and Inventories Key Specific Question 4; and Uncertainties:</u>

Dr. Middleton asked for panel members' thoughts about disaggregation by title and regional disaggregation. Dr. Price addressed the difficulties in adjusting modeling estimates to

adjust for different titles. Both the static and dynamic options presented problems. Dr. Middleton stated that the title-by-title approach appeared as an "artificial exercise," which ran the risk of misinterpretation of outcome. She emphasized the support in the Council for disaggregation by title and requested detailed and honest opinion on this issue from panel members on phone or in writing. Dr. Larson added that the air toxic scenario could be addressed through a separate scenario, without a title-by-title adjustment.

Dr. Price then suggested that, if the Council was eager to disaggregate, it might separate on-road mile sources from everything else. Jim DeMocker welcomed ideas on supplemental redcution scenarios (e.g., utilities, highway vehicles, combination) as described in Option 6 in Table 10-6.

In regard to geographic disaggregation, the panel agreed that themore sensible disaggregation is based on airsheds, not EPA regions. Dr. Hopke suggested diving the country into a few major modeling regions. Dr. Larson pointed out the current distribution of monitors and suggested that any option take that iuformation into consideration. Mr. DeMocker suggested that the Agency might develop an additional hybrid option, based on boundaries of regional planning dimensions and differentiated according to airsheds, as defined by monitoring locations.

Dr. Middleton requested panel members provide information on modeling scenario extended to 2030. She also requested suggestions for advice on conveying uncertainties and whether the Agency's previous tabular approach was the most appropriate

Action items:

1. AQMS members to provide written drafts on topics assigned to them to Dr. Middleton and Dr. Nugent by noon eastern time, Thursday, July 5
2. Dr. DeMocker agreed to try to provide for next week's meeting information about the impact of MOBILE6on PM
3. Mr. DeMocker responded that he will confer with the DFO concerning a proposed process and schedule for sharing interim results with the AQMS.
4. Panel members all to send Dr. Middleton views on disaggregation by title, modeling scenarios and representation of uncertainties

At 4:00 p.m., Dr. Middleton adjourned the teleconference.

Respectfully Submitted:

Designated Federal Official

Certified as True:

Chair

NOTE AND DISCLAIMER: The minutes of this public meeting reflect diverse ideas and suggestions offered by the Council members and consultants (M/C) to the Agency during the course of deliberations within the meeting. Such ideas, suggestions and deliberations do not necessarily reflect definitive consensus advice from the Council M/C. The reader is cautioned to not rely on the minutes to represent final, approved, consensus advice and recommendations offered to the Agency. Such advice and recommendations may be found in the final advisories, commentaries, letters, or reports prepared and transmitted to the EPA Administrator following the public meetings.